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10/646,959	08/22/2003	William Sumner Brown	WSB1	3007

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EXAMINER	
KURR, JASON RICHARD	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,959	BROWN, WILLIAM SUMNER	
	Examiner	Art Unit	
	JASON R. KURR	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-18 and 20* is/are rejected.

7)☒ Claim(s) *7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6, 11-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) an in further view of Carter (US 2002/0150262 A1).

With respect to claim 1, Press discloses a safety system for a host vehicle whose driver can be protected from audible noise, said safety system comprising: (a) one or more directionally discriminating microphones on said host vehicle (fig.1 #31,32,33), (b) one or more loudspeakers positioned so that said driver can clearly hear sounds produced by said loudspeakers (col.7 ln.8-13), (c) signal processing means (fig.3 #51,52,53) whose functions include amplifying signals from said microphones and feeding amplified signals from said microphones to lamps (col.3 ln.53-59), said microphones sensing sounds made by objects in said host vehicles environment, and said safety system is configured so that said driver hears sounds made by nearby vehicles that said driver should be aware of said nearby vehicles for purposes of safe driving (col.2 ln.33-50), and said driver is generally unaware of sounds from said safety system that originate from said host vehicle, whereby said driver is made aware of the

presence of said nearby vehicles behind or beside said host vehicle, and said directionally discriminating microphones in combination with said signal processing means greatly improve the quality of sounds provided to said driver so that said driver is not annoyed by additional noise from said host vehicle (col.3 ln.58-68).

Press does not disclose expressly wherein the signal processing means feeds the amplified signals to loudspeakers such that the driver can approximately locate by ear the position of said nearby vehicles that he or she apparently hears.

Lehmann discloses an object detection system that provides a driver with information through sound wherein a signal professing means (fig.1 #30) feeds signals from microphones (fig.1 #28a-d, col.3 ln.22-23) to loudspeakers (fig.1 #32a-d) within the vehicle such that the driver can approximately locate by ear the position of nearby objects that he or she apparently hears (col.2 ln.11-21). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the spatial audio reproduction of Lehmann to reproduce the audible warning signal of Press. The loudspeaker system of Lehmann would be used in place of the warning loudspeaker of Press. The motivation for doing so would have been to audibly warn the driver as to the direction of the obstacles, such as the location of other vehicles on the road.

Press and Lehmann do not disclose expressly wherein the driver hears reproductions of the sounds made by the nearby vehicles. The sounds emitted by Press and Lehman are audible beeps or tones.

Carter discloses a safety system for a host vehicle (fig.1 #50), wherein microphones (fig.1 #20) mounted on the vehicle transmit reproductions of sounds

originating in the vehicles environment to a loudspeaker (fig.1 #45) within the vehicle compartment. At the time of the invention it would have been obvious to a person of ordinary skill in the art to directly feed the audio signals received by the microphones of Press to the loudspeaker of Lehmann as performed by Carter. The motivation for doing so would have been to directly hear the actual sounds of the environment outside the vehicle cabin. The would be advantageous in the event of an oncoming emergency siren such as an ambulance, fire truck or police car siren, by allowing the driver to identify the type of oncoming object through direct sound reproduction.

With respect to claim 6, Press discloses the safety system as in claim 1, wherein said signal processing means includes means for automatically setting the sound volume of said safety system to a level sensitive enough to hear conversations outside said host vehicle when said host vehicle is moving slowly, whereby reducing the risk of injuring people while said host vehicle is moving backward and wherein said signal processing means includes means for automatically setting the sound volume of said safety system to a level sensitive enough to hear conversations outside said host vehicle when said host vehicle's transmission is in reverse, whereby reducing the risk of injuring people while said host vehicle is moving backward. It is implied that input microphone processing circuits contain amplifiers to automatically amplify (i.e. adjust) the level on the input microphone signal. These pre-amplifications to the input signal would occur regardless of the direction of the vehicle; hence the sound volume is always being adjusted. The term “sensitive enough” does not describe a limit or range

that sound volume should be set to. Therefor, any amplification level that the Press reference achieves anticipates the claim language “sensitive enough”.

With respect to claim 11, Press discloses a safety system as in claim 1 wherein at least one of said directionally discriminating microphones is a left microphone (fig.1 #32) that is deployed to preferentially sense sounds that originate from the left side of said host vehicle, and at least one of said directionally discriminating microphones is a right microphone (fig.1 #33) that is deployed to preferentially sense sounds that originate from the right side of said host vehicle, and said signal processing means include one filter means that predominately affects signals originating from said left microphone (fig.3 #52), and another filter means that predominately affects signals originating from said right microphone (fig.3 #53), and these said filter means for the left and right signals affect the signals from said left microphone and said right microphone differently, whereby these deliberately unmatched filters allow people with one ear more capable than the other to determine with one good ear on which side a nearby vehicle is located (col.7 ln.8-17).

With respect to claim 12, Press discloses a safety system as in claim 11 wherein the signals from said unmatched filters are combined into a single signal before being converted to sound by said loudspeakers (col.7 ln.8-17).

With respect to claim 13, Press discloses a safety system as in claim 1 wherein said signal processing means includes one or more level-dependent signal processing means that have frequency response properties that change based on a control signal, said control signal originating from said directionally discriminating microphones, said

control signal responding to signal levels in a frequency region that is high enough whereby the directional properties of said directionally discriminating microphones are effective (col.3 ln.53-68), whereby said control signal indicates a source of external sound that is not the host vehicle, said level-dependent signal processing means having as their signal input signals originating from said directionally discriminating microphones, said level-dependent signal processing means having outputs that go toward said loudspeakers, and said frequency response properties change at rates that are substantially below audio frequencies, whereby the sounds provided by said safety system to said driver are realistic representations of sounds made by nearby vehicles (col.7 ln.8-37), and whereby signal components of lower frequencies that can be effectively selected by the directional properties of said directional microphones can be controlled by the directional properties of said directional microphones (col.2 ln.33-50).

With respect to claim 14, Press discloses a safety system as in claim 13 wherein said level-dependent signal processing means has no noticeable effect under low sound level conditions, such as sound levels of a normal conversation near a slowly moving vehicle (col.3 ln.53-59).

With respect to claim 20, Press discloses a safety system for a host vehicle whose driver can be protected from audible noise, said safety system comprising: (a) one or more microphones on said host vehicle (fig.1 #31,32,33) (b) one or more loudspeakers positioned so that said driver can clearly hear sounds produced by said loudspeakers (col.7 ln.8-13) (c) signal processing means (fig.3 #51,52,53), said microphones sensing sounds made by objects in said host vehicles environment

whereby said driver is made aware of the presence of said nearby vehicles behind or beside said host vehicle (col.2 ln.51-56).

Press does not disclose expressly wherein the signal processing means feeds the amplified signals to loudspeakers such that the driver can approximately locate by ear the position of said nearby vehicles that he or she apparently hears.

Lehmann discloses an object detection system that provides a driver with information through sound wherein a signal professing means (fig.1 #30) feeds signals from microphones (fig.1 #28a-d, col.3 ln.22-23) to loudspeakers (fig.1 #32a-d) within the vehicle such that the driver can approximately locate by ear the position of nearby objects that he or she apparently hears (col.2 ln.11-21). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the spatial audio reproduction of Lehmann to reproduce the audible warning signal of Press. The loudspeaker system of Lehmann would be used in place of the warning loudspeaker of Press. The motivation for doing so would have been to audibly warn the driver as to the direction of the obstacles, such as the location of other vehicles on the road.

Press and Lehmann do not disclose expressly wherein the driver hears reproductions of the sounds made by the nearby vehicles. The sounds emitted by Press and Lehman are audible beeps or tones. Press and Lehmann also do not disclose expressly wherein the processing means includes a function that exploits the spectral nature of noise and the acoustic properties of the vehicles.

Carter discloses a safety system for a host vehicle (fig.1 #50), wherein microphones (fig.1 #20) mounted on the vehicle transmit reproductions of sounds

originating in the vehicles environment to a loudspeaker (fig.1 #45) within the vehicle compartment. At the time of the invention it would have been obvious to a person of ordinary skill in the art to directly feed the audio signals received by the microphones of Press to the loudspeaker of Lehmann as performed by Carter. The motivation for doing so would have been to directly hear the actual sounds of the environment outside the vehicle cabin. The would be advantageous in the event of an oncoming emergency siren such as an ambulance, fire truck or police car siren, by allowing the driver to identify the type of oncoming object through direct sound reproduction. Carter also discloses signal processing means (fig.1 #30) comprising a function for exploiting the spectral nature of the received microphone signal such that a desired portion of the signal may be selected or discarded relating noise or the acoustic properties of the vehicles such as sirens (pg.2 [0015]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to filter the input signals for the purpose of suppressing noise from being reproducing within the vehicle compartment.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1)and in further view of Farmer et al (US 5,979,586).

With respect to claim 2, Press discloses a safety system as in claim 1, however does not disclose expressly wherein the loudspeaker is mounted in positions such that they are closer to said driver's ears than to the ears of other occupants of said host

vehicle when seated in vehicle seats, whereby the passengers in said host vehicle are generally not aware of sounds from said safety system.

Farmer discloses a collision warning system wherein loudspeakers (fig.7 #16) are mounted in positions such that they are closer to said driver's ears than to the ears of other occupants of said host vehicle when seated in vehicle seats, whereby passenger in said host vehicle are generally not aware of sounds from said safety system (col.5 ln.1-13).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the loudspeaker arrangement of Farmer in the invention of Press.

The motivation for doing so would have been to provide the driver with a sound that radiates directionally with respect to the detected microphone sound. This would allow the driver to quickly realize the direction of the sound source. A localized sound system around the driver would also allow any passengers to enjoy other types of acoustic entertainment without the interruption of the warning system.

With respect to claim 3, Press discloses the safety system as in claim 1 in view of Farmer, wherein said driver is protected from audible noise by a passenger compartment of said host vehicle. Press does not disclose expressly the details of the loudspeaker arrangement.

Farmer discloses a vehicle collision warning system wherein loudspeakers are two or more in number (fig.7 #16), and at least one of said loudspeakers is mounted in a position that is closer to the left ear of said driver than to the right ear of said driver, and at least one other of said loudspeakers is mounted closer to the right ear of said driver

than it is to the left ear of said driver (fig.7 #16), and said loudspeakers are positioned close to the driver's ears compared with distances to said passenger compartment windows and roof, and said loudspeakers close to the left ear receive signals that originated from said directionally discriminating microphones that are shaped, located and oriented so as to favor sounds originating from the left side of said host vehicle and said loudspeakers close to the right ear receive signals that originated from said directionally discriminating microphones that are shaped, located and oriented so as to favor sounds originating on the right side of said host vehicle, whereby said driver can easily determine by ear the location of said nearby vehicles (col.2 ln.6-14).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the directionally reproducing loudspeaker system of Farmer in the system of Press. The motivation for doing so would have been to audibly alert the driver as to the position of an incoming alarm or hazard.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) and in further view of Werrbach (US 6,266,423 B1).

With respect to claim 4, Press discloses a safety system as in claim 1, however does not disclose expressly wherein said signal processing means includes a dynamic range compressing signal processing means whereby the amplification gain of said signal processing means, between the inputs from said microphones and outputs to

said loudspeaker is automatically and progressively reduced as the signal levels increase, whereby mitigating unusually loud sounds.

Werrbach discloses a dynamic range compressing signal processing means that automatically and progressively reduces gain as a signal level increases, whereby mitigating unusually loud sounds (col.1 ln.37-65).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the dynamic range compressing signal processing means as disclosed by Werrbach on the microphone inputs of Press.

The motivation for doing so would have been to prevent any loud signal spikes that would result in a displeasing audible sound.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) and in further view of Terai et al (US 5,377,276).

With respect to claim 5, Press discloses a safety system as in claim 1, however does not disclose expressly further including at least one pavement condition monitoring microphone deployed such that said pavement condition monitoring microphone senses predominately tire noise from said host vehicle, the signals from said pavement condition monitoring microphones being used to change properties of said signal processing means, whereby adjusting said safety system for variable conditions of pavement conditions, weather conditions, and the speed of said host vehicle.

Terai discloses an apparatus for influencing oscillation in the passenger cabin of a motor vehicle, wherein at least one pavement condition monitoring microphone (fig.1 #1) deployed such that said pavement condition monitoring microphone senses predominately tire noise from said host vehicle (col.6 ln.24-29), the signals from said pavement condition monitoring microphones being used to change properties of a signal processing means (fig.1 “prediction filter”), whereby adjusting said safety system for variable conditions of pavement conditions, weather conditions, and the speed of said host vehicle (col.1 ln.11-15).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the oscillation influencing apparatus of Terai in the invention of Press.

The motivation for doing so would have been to cancel undesirable noise in the cabin of the vehicle, such as road and engine noise.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) and in further view of Sindle (US 5,173,881).

With respect to claim 9, Press discloses a safety system as in claim 1, however does not disclose expressly wherein said signal processing means includes a volume control means that said driver can adjust to change the level of sound that reaches his or her ears from said loudspeakers for a given circumstance of sound producing objects outside and near said host vehicle.

Sindle discloses a warning system for a vehicle wherein a signal processing means includes a volume control means that said driver can adjust to change the level of sound that reaches his or her ears from said loudspeakers for a given circumstance of sound producing objects outside and near said host vehicle (col.6 ln.13-15).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to allow a driver to control the volume of the audio signal being reproduced in Press as disclosed by Sindle.

The motivation for doing so would have been to allow a user to adjust the reproduced sounds to a comfortable level, as to not disturb passengers in the vehicle.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) and in further view of Kawakami (US 6,407,733 B1).

With respect to claim 10, Press discloses a safety system as in claim 1 wherein said host vehicle has a driver's seat in a passenger compartment (inherent), however does not disclose expressly further including driver changeable control means that affect the characteristics of said signal processing means, said driver changeable control means being mounted on said driver's seat or a head rest on said driver's seat.

Kawakami discloses a driver changeable controller for vehicle systems that is mounted on said driver's seat or a headrest on said driver's seat (col.1 ln.50-60, fig.6).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the driver changeable control means of Kawakami to control the safety system of Press.

The motivation for doing so would have been to allow a driver to gain easy access to control inputs of the system. This would allow the driver to manipulate functions such as volume control without moving from the driver's seat.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) and in further view of Hosono et al (US 7,062,060 B2).

With respect to claim 15, Press discloses a safety system as in claim 1, however does not disclose expressly the mounting of the microphones.

Hosono discloses a microphone system mounting on a vehicle wherein the directional properties of one or more of said directionally discriminating microphones (fig.1 #62) are achieved by one or more tapered acoustic waveguides, with one

microphone for each waveguide, wherein each said waveguide has its larger end opening in the rear of said host vehicle to the exterior of said host vehicle, and with the smaller end of said waveguide inside said host vehicle (fig.1 “opening between #20 and #30”), and with said smaller end of said waveguide holding any components of said directionally discriminating microphone that are sensitive to water, thereby achieving directionally discriminating microphone properties and sheltering water sensitive components (col.8 ln.23-39).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the side view mirror mounting of Hosono to house the microphones of Press. The motivation for doing so would have been to protect the microphones of Press from weather damage.

With respect to claim 16, Press discloses a safety system as in claim 15 wherein each opening of said large end of each said acoustic waveguide is shaped so that the spatial patterns of high selectivity have a desirable shape about the axes of highest sensitivity (Hosono: fig.1).

With respect to claim 17, Press discloses a safety system as in claim 15, wherein the directions of high sensitivity of said acoustic waveguides point nearly straight back from said host vehicle and the openings of said acoustic waveguides are substantially asymmetric from left to right so that for sounds originating to the sides of said host vehicle, substantially away from the direction of peak sensitivity, at least one of said microphones is more sensitive to sounds originating from the left of said host vehicle,

and at least one of said microphones is more sensitive to sounds originating from the right of said host vehicle (Hosono: fig.1).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Press (US 3,626,365) in view of Lehmann (US 6,731,204) in view of Carter (US 2002/0150262 A1) in view of Hosono et al (US 7,062,060 B2) and in further view of Marshall (US 2,131,593).

With respect to claim 18, Press discloses a safety system as in claim 15, however does not disclose expressly wherein said large end openings of said tapered acoustic waveguides are covered by screens, whereby keeping insects and other objects out of said waveguides and reducing noise caused by air moving past said host vehicle.

Marshall discloses an acoustic sensor that is covered by a screen (fig.3)

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the screen of Marshall to cover the acoustic sensors of Press. The motivation for doing so would have been to block foreign objects from damaging the sensors.

Allowable Subject Matter

Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims. Claim 8 must also be rewritten to overcome the lack of antecedence as presented in the "Claim Objections" section above.

Response to Arguments

Applicant's arguments with respect to claims 1 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON R. KURR whose telephone number is (571)272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Kurr/
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614